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# USSR Report

CONSTRUCTION AND RELATED INDUSTRIES

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20 February 1985

## USSR REPORT

### CONSTRUCTION AND RELATED INDUSTRIES

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## CONSTRUCTION PLANNING AND ECONOMICS

### HOUSING, INDUSTRIAL CONSTRUCTION IN MOLDAVIA VIEWED

Moscow STROITEL'NAYA GAZETA in Russian 12 Oct 84 p 2

[Article by V. Savochko, secretary of the Communist Party Central Committee in Moldavia: "In the Family of Fraternal Peoples"]

[Text] The workers of the republic greeted the important 60th anniversary of the Moldavian SSR and Communist Party of Moldavia with great achievements, which is an important landmark in the history of Soviet Moldavia and its party organization, and is an important event in the social and political life of the republic. By marking this historical date and the republic's achievements that are associated with it, we demonstrate the eternal and indissoluble friendship with our fraternal brothers which was forged in the class struggles and everyday working life of the five-year plans, which passed a severe test during the years of the Great Patriotic War, and which is becoming even more strongly bound together at the stage of ripening socialism. Within a short historical period Soviet Moldavia has been transformed from a backward outlying region into a flowering land with a developing modern industry, large-scale mechanized agriculture, and a high level of culture under the leadership of the Communist Party and with the support of all the fraternal peoples in our country.

An important role in achieving this success belongs to capital construction.

In recent years fixed assets worth more than 25 billion rubles have been put into operation in the republic including 4.5 billion rubles during the last three years of the 11th Five-Year Plan. Today, 4.5 million rubles of capital investments are utilized and fixed assets worth more than 4 million rubles are built in one day on the average. Every day 70 apartments are turned over for use and 300 people improve their living conditions.

The fast pace of capital construction has aided in bringing about a situation where 275 new large state industrial enterprises have been built and put into operation during the post-war period in a land that had practically not known industrial production.

Power occupies the leading position among the sectors of the economy. The Kishinev and Bel'tsi TETs [heat and electric power plant], Dubossary GES [hydroelectric power plant] and the Moldavian GRES [state regional electric power plant], the largest in the southern part of the country, have been built



during the post-war period which made it possible not only to completely meet the needs of the republic for electric power but also to send part of it to our friends in the Ukraine and the People's Republic of Bulgaria.

Construction of enterprises that provide technical progress are the center of attention including the "Vibropribor" Plant, a tractor plant, and the "Schetmash" Plant in Kishinev, a foundry machines plant and the "Elektromash" Plant in Tiraspol', the "Moldavkabel'" Plant in Bendery, the "Komplektkholodmash" Plant in Strasheny, the motor vehicle repair plant in Aleksandreny and others.

Hundreds of food industry enterprises have been built in the republic in the post-war years including 10 sugar plants with a capacity of processing 29,700 tons of raw materials a season, dozens of bakeries and canning, wine-making, meat-packing, and cheese and butter plants.

Substantial capital investments are being allocated toward agriculture. About 9 billion rubles were allocated for the entire program of work during the 9th, 10th, and 3 years of the 11th Five-Year Plans alone including more than half by the government.

Thousands of hectares of irrigated land were put into use in the post-war period at kolkhozes and sovkhoses, and livestock complexes for producing meat and milk, fowl breeding facilities, elevators, mixed feed enterprises, grain warehouses and grain and seed storehouses were built. Among these are the Rybnitsa and Grigoriopol' irrigation systems covering 22,000 and 18,000 hectares respectively, the Floreshty and Novoanensk swine breeding complexes that can handle 36,000 head each, the Grigoriopol' and Kagul that can handle 10,800 and 10,600 head each, complexes for raising and feeding young cattle and others. The accelerated growth in the amount of capital investments for land reclamation and water management was an important factor in the further development of the republic's agroindustrial complex. During the 10th Five-Year Plan alone capital investments for these purposes grew by a factor of 1.6 and amounted to 300 million rubles. Work is gearing up on a large scale to build irrigation systems and canals in the south of the republic. It is projected that more than one half billion rubles of capital investments will be utilized, 120,000 hectares of irrigated land will be developed, and that the area having canal irrigation will increase by a factor of 6 during the 11th Five-Year Plan.

In 60 years 43.6 million square meters of housing were built and put into use by the government, kolkhozes and interkolkhoz organizations and also by means of funds from the population and with the aid of government credit. During the 9th, 10th, and 3 years of the 11th Five-Year Plans alone more than 357,000 new comfortable apartments were put into use generally having improved floor plans, and more than 1.6 million people improved their living conditions. The level at which an urban inhabitant is provided with housing increased to 12.5 square meters versus 8.5 square meters in 1960.

The rapid pace of construction fundamentally changed the outward appearance of the villages in the republic. Many of them have acquired the characteristics

of towns with all types of cultural and everyday services, with a high level of architectural and planning approaches to the public centers, housing and public buildings, and with an integrated approach to construction. Gas, water lines, telephone, television, sports complexes, Palaces of Culture, consumer and trade houses, polyclinics, parks and squares have become the norm for practically all villages today. At the recent all-union review competition for the best construction and amenities in populated rural areas 14 villages in our republic were awarded USSR VDNKh [Exhibition of USSR National Economic Achievements] diplomas and 43 in all received awards. Among these were the villages of Romaneshty, Kopanka, Okyul'-Alb, Tsaul', Peresecheno, and others.

Completing a program on such a scale preset the stage for the further development of the production base for the construction sector and transformed it into a motive force for the republic's national economy, possessing powerful industries and organizations, highly productive machines and mechanisms, and qualified personnel. The volume of work done by a single organization increased by almost a factor of 1.5 in comparison with 1965. The total amount of work done by contract organizations reached 621 million rubles or increased by a factor of 3.5 in comparison with 1965.

Construction workers in the republic were the first in the Soviet Union to master the technology of erecting housing units using modular adjustable panel formwork for which the group of authors were awarded the USSR Council of Ministers Prize. Substantial capacities were built to erect monolithic concrete buildings which make it possible to build 13- and 20- story housing units with a total floorspace of 60,000 square meters by this method every year.

The republic party organization is giving special attention to training cadre and forming stable collectives of construction workers. The replacement of workers is made primarily through graduates of professional and technical schools. More than 22,000 engineers and construction technicians were trained in the republic from 1974 to 1984. More than 3,500 construction workers in the republic have been awarded orders and medals. Among them are Heroes of Socialist Labor D. Kretsul, G. Seletskiy, V. Buga, R. Dubilevskiy, and P. Gorodetskiy, and USSR Supreme Soviet Deputies I. Roshka and F. Tsurkan.

In preparing to fittingly greet the 60th anniversary of the republic construction workers have extensively promoted socialist competition under the slogan of "60 Weeks of Hard Work for the 60th Anniversary of the Republic" and a competition among associated workers based on the principle of a "workers' relay race." As their gift for the republic's anniversary construction workers have promised that smelting will take place for the first time at the Moldavian Metallurgical Plant in Rybnitsa, that the whole milk substitute plant in Kalininsk will become operational one and a half months ahead of schedule, and that the capacities at the tractor plant in Kishinev, the bakery products combine and "Moldavkabel'" plant in Bendery, the tobacco plant in Orgeyev, the cast machinery plant in Tiraspol' and the "Komplektkholodmash" Plant in Strasheny will be put into operation before the end of the year. During the current five-year plan it is projected that construction of one of the largest cement plants in the country will be completed at Rezina, as well

as a sugar plant in Brichany, and that new capacities at enterprises for turning out consumer goods, producing eggs, meat, milk, champagne and canned goods will be turned over for use.

Realization of these plans will inaugurate a new stage of economic flowering for the republic, and a growth in its industrial potential, and satisfy the population more fully for housing and in the sphere of culture and everyday service. Our cities and villages will become more beautiful and comfortable.

9495

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## CONSTRUCTION PLANNING AND ECONOMICS

### STRENGTHS, WEAKNESSES OF CAPITAL CONSTRUCTION SECTORS

Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 84 p 12

[Article: "Development of Economic Mechanism in Construction"]

[Text] During the 1984--1985 academic year many students of the economic educational system have enrolled in the course entitled "Development of the Economic Mechanism in Construction." The standard program of this course was published in the No 32 issue of our weekly.

Published below are materials to aid propagandists and students with regard to the initial topics of the course being studied.

The Communist Party regards improvement of the economic mechanism as one of the pivotal problems of economic policy, of successfully conducting a course aimed at increasing production efficiency and work quality. In accordance with the decisions of the 26th CPSU Congress and the ensuing Plenums of the CPSU Central Committee, a complex of measures is being carried out in our country with respect to re-structuring the system of administering the economy and the entire economic mechanism. This work includes a large-scale economic experiment which is being conducted in industry, in the service field, and in other sectors of the national economy.

#### New Requirements for Construction

The development of capital construction is an object of constant attention by the party and the government. Specific measures for increasing its efficiency and eliminating existing shortcomings were outlined in the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving the Planning, Organization, and Administration of Capital Construction." Their implementation will allow us to speed up the construction of new and the modernization of existing production capacities and facilities, to improve work quality, and to substantially reduce the outlays of resources per unit of final construction output.

Profound study of this document and the course followed in its practical implementation should comprise the basic contents of the classes in the course entitled "Development of The Economic Mechanism in Construction." We must concentrate the students' attention on the fundamental positions of the decree of

the CPSU Central Committee and the USSR Council of Ministers, thoroughly analyze the course being followed in fulfilling the plan assignments for 1984 and the five-year plan as a whole with regard to the growth of labor productivity, the putting of capacities and facilities into operation; we must also discuss measures for successfully carrying out the pledges which have been made, as well as devising ways to further increase the efficiency of construction production.

This decree precisely formulates the goals and tasks of developing the sector's economic mechanism; it sets forth measures of an organizational, economic nature, which must be carried out in the very near future.

Above all, it provides guarantees that the capital investments are directed at carrying out the measures connected with introducing the latest scientific and technical achievements into the national economy, at retooling and modernizing existing enterprises, at the comprehensive development of the raw-material and processing sectors, and at eliminating inter-sectorial and intra-sectorial disproportions.

Thus, one of the principal tasks assigned to this sector is the maximum cooperation in speeding up scientific and technical progress in the national economy. And the conversion of the economy to a primarily intensive path of development depends on this, as is well known, to a decisive extent.

The decree sets forth the task of ensuring a balance between the limits of capital investments and the construction-and-installation work with the financial and material resources, as well as with the capacities of the construction-and-installation organizations. The construction of enterprises and facilities must be carried out strictly in accordance with the norms of the construction deadlines.

The foundation of the policy in the sphere in increasing production capacities in the next few years and the future should be the modernization and retooling of the existing enterprises on the basis of introducing new, highly efficient technical processes and equipment.

It has been determined that the construction-and-installation trust should be the basic cost-accounting unit in administering construction production. The trust's directors bear the responsibility for putting production capacities and facilities into operation on schedule, for carrying out construction-and-installation work in accordance with the comprehensive tables which have been developed and approved, the assigned tasks with regard to the growth in labor productivity, profits, and reductions on the costs of the construction-and-installation work, as well as for observing other technical-economic indicators.

It is necessary that the classes stress the fact that executing the tasks which have been assigned to capital construction depends on the specific labor contribution of each construction organization, of all the participants in construction production, and of every employee in this sector. Playing a special role here is the unconditional fulfillment by all the enterprises and organizations of the plan assignments with respect to putting production capacities and facilities into operation, as well as apartment houses, children's pre-school

institutions, facilities for health care and community services, as well as upgrading the quality of construction.

One of the important requirements for builders is to achieve a significant growth in labor productivity. Among the reserves to which the students must pay attention are the following: elimination of losses in working time and of violations of labor and production discipline, upgrading organizational quality and standards, development and utilization of the advantages of the brigade contract, improving the working and living conditions for the employees of the construction organizations and enterprises of the construction industry.

#### Among All the Participants in Construction

Carrying out the complex of measures with regard to developing the economic mechanism pertains not only to the construction organizations themselves but also to all participants in construction.

The decree specifies concrete measures along these lines. Among them are the following:

improving the planning of capital construction, upgrading the scientific grounds of plans, creating conditions for expanding operations with regard to retooling and modernizing the existing enterprises, perfecting material and technical supply, improving the procedure for financing and crediting capital investments;

new planning and evaluational indicators for the work of the construction-and-installation organizations, strengthening the economic levers and incentives;

improving the economic inter-relationships among the participants in construction: calculations between the customers and the design-research organizations for fully completed plans; development of a method for calculating finished construction output.

The influence of the economic mechanism on the effectiveness of construction depends, to a great extent, on the level of the economic work in the construction-and-installation organizations, trusts, and other units of construction production, the effectiveness of economic study, and the vocational training of the builders.

Thus, we need the well-organized, joint efforts of all the participants in construction--the planning, supply, and financing organs, the construction and industrial ministries, party and trade-union committees, as well as the local Soviets--in order to bring capital construction into the forefront.

For this purpose it is necessary to significantly increase the responsibility of the ministries, departments, enterprises, and customer-organizations for radically improving the state of affairs in capital construction. In 1984--1985 they must work out measures aimed at substantially increasing the effectiveness of using capital investments and performing within the established deadlines the assigned tasks of putting capacities and facilities into operation. It has been proposed that the management personnel of such enterprises and customer-



organizations ensure the use in plans of technical solutions utilizing advanced Soviet and foreign experience, complete delivery and turnover of equipment for installation in accordance with the schedule, the on-time working out and high quality of planning and estimate documentation.

The precise interaction of groups at the construction-and-installation, transport, and planning organizations, enterprises engaged in manufacturing equipment, materials, and structural components, helps to ensure comprehensive competition in accordance with the principle of the "Workers' Relay Race." This is precisely the way things are organized, for example, at the Gomsel'mash construction in Belorussia. Here contract-pledges were concluded among workers in closely allied fields; for each project schedules were approved for operational production and equipment deliveries, and criteria for the competition were worked out.

The strength of such a labor competition, as testified to by the experience of the Apatitstroy Trust in the Arctic Region, the Gatchinsk Rural and Voronezh Home-Building Combines, grows even more if it is based on a thorough-going brigade-type contract.

#### Utilizing Advanced Experience

In recent years the construction industry has accumulated experience in conducting economic experiments aimed at improving the work of this important sector of the national economy.

In Belorussia, for example, an economic experiment was carried out on applying unit-type indicators for all the participants in construction production, based on putting finished projects into operation. In Lithuania the Ministry of Construction and the construction-and-installation organizations included within it have made the transition in the year plans to planning labor productivity and the wage fund in accordance with standardized-net output (normative).

Wide renown has been attained by the initiative of the Orel builders, who introduced two-year directive schedules for the construction of housing and civil projects. The experiment in organizing the smooth introduction of projects in the city of Orel has been approved by the CPSU Central Committee.

For further improving the economic mechanism in construction, a decree of the CPSU Central Committee and the USSR Council of Ministers indicates that it is planned to carry out, beginning in 1985 in the form of an experiment the construction of a number of production and social-community-service projects, as well as apartment houses, handing them over in "turn-key" condition, bearing in mind that, in connection with this, there is an increase in the material incentives of the contract construction organizations on account of the difference between the estimated and the actual cost of construction.

Provisions have been made to conduct such an experiment in the construction organizations of Glavsreduralstroy of the USSR Ministry of Construction of Heavy Industry Enterprises, Glavsrednevolzhstroy of the USSR Ministry of Industrial

Construction, Glavzapstroy of the USSR Ministry of Construction, and in the construction ministries of the Belorussian SSR.

\* \* \*

With regard to the first topic of the course, provision has been made to conduct a seminar entitled "Improving the Economic Mechanism--An Important Condition for Intensifying and Increasing the Efficiency of Construction Production." In the procedure of preparing for the seminar it is recommended that the students be entrusted with the task of working out summary reports (a sample list of the topics for such reports is cited in EKONOMICHESKAYA GAZETA, No 32, 1984, p 9).

In the practical work of the class, in connection with preparing the reports, it is important to make extensive use of the materials on the advanced experience of planning, organizing, and administering construction, to discuss specific ways and methods of performing within one's own construction organization the tasks assigned by the party with respect to improving capital construction, increasing its effectiveness and quality, reducing costs, and the steady growth of the builders' labor productivity.

During the preparation for and in the course of the classes the propagandists and students thoroughly study the materials of the 26th CPSU Congress and the ensuing Plenums of the Central Committee, the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving the Planning, Organization, and Administration of Capital Construction." It is also recommended that use be made of articles and correspondence relating advanced operational experience of the construction organizations with regard to increasing the effectiveness of production.

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## CONSTRUCTION PLANNING AND ECONOMICS

### ROUNDTABLE ON ORGANIZATION OF SUPPLY

Moscow EKONOMIKA STROITEL'STVA in Russian No 8, Aug 84 pp 9-15

[Article: "Bringing the Organization of Material-Technical Supply to the Level of Current Problems; A Round-Table Discussion"]

[Text] At the "round-table" organized by the editorial staff of the journal EKONOMIKA STROITEL'STVA and the Central Interdepartmental Institute for Improving the Qualification of Managers and Specialists of Construction Organizations (TsMIPKS) of the MISI [Moscow Order of the Red Labor Banner Engineering-Construction Institute] imeni V. V. Kuybyshev, the audience--deputy managers of supply trusts, UPTK [production-technological acquisition administration] chiefs and other specialists within the system of material-technical supply and acquisition of the USSR Ministry of Heavy Industry, USSR Ministry of Industrial Construction, USSR Ministry of Rural Construction, and Ministry of Construction in the Far East and Transbaykal Regions--met with the management of the USSR Gosnab and the managers of the main supply administrations of these ministries. They discussed the problem of increasing the effectiveness of the system of material-technical supply and production-technological acquisition and construction.

In his introductory address, TsMIPKS Director, Doctor of Technical Sciences Professor Yu. M. Bazhenov stressed that the planned transition of the national economy to the path of intensive development presents builders with major and important tasks. Their input has a decisive significance for accelerating scientific-technical progress in all sectors of the economy.

The successful implementation of the requirements set forth in the resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving the Planning, Organization and Management of Capital Construction" depends to a significant degree on the level of training of managers and specialists in building production.

At the TsMIPKS, deputy ministers of the republic construction ministries, deputy chiefs of main building administrations, trust managers and head engineers, SMU [construction-installation administration] chiefs and head engineers, building industry plant directors, chiefs and engineers of trust sections, administrations, enterprises, and others are improving their level of training.

The study programs consider the basic directions for improving construction technology, engineering preparation, building production, organization, planning and management of capital construction, the economic management mechanism and price formation. At the present time the institute is devoting much attention to increasing the level of training of workers in such a promising direction as the sectorial system of material-technical supply and production-technological acquisition. This is understandable, since the timely and integrated delivery of material resources to the construction sites ensures the successful fulfillment of plan assignments for the operational introduction of production capacities and facilities, the growth in labor productivity, and the reduction in cost of construction-installation work.

All the conditions have been created at the institute for organizing the study process according to questions of material-technical supply and production-technological acquisition in construction and for increasing the level of training of managers and specialists of sectorial acquisition organizations. A department of material-technical supply and acquisition has been organized, educational topic plans and new programs of study have been developed. Every year up to 800 UPTK managers and specialists from construction-installation organizations, acquisition trusts (administrations) and industrial acquisition trusts (associations) can improve their level of training at the institute.

Deputy Chairman of the USSR Gosstab N. T. Arkhipets told of the means of improving supply of construction sites through the system of the USSR Gosstab and of the economy of material resources.

The resolution by the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving the Planning, Organization and Management of Capital Construction" outlined specific measures for the more effective utilization of capital investments. In developing the plans, state funds will be directed primarily to the implementation of measures associated with the introduction of the latest scientific-technical achievements into the national economy and to the retooling and reconstruction of existing enterprises. The rates of construction will be better balanced with the material resources and with the capacities of construction-installation organizations.

In light of these decisions, the USSR Gosstab will follow the path of ensuring complete assortment delivery of materials and equipment, primarily for fulfilling work on reconstruction and technical retooling. A priority is being established for the complete supply of underway construction projects for the current and following year with materials, building technology, transport means, and technological equipment. Plans are being made to implement in the construction ministries a complete transition to the determination of need for material resources by projects and estimates, as well as their distribution between the construction organizations and sites based on this need. The widespread use of computers is necessary for this purpose. The role of the USSR Gosstab territorial organs is increasing in implementing complete set delivery of these resources by nomenclature and assortment for construction sites in accordance with requests and orders and with consideration of the production schedules for the construction-installation work. These organs also implement control over the actual expenditure of these materials.

The system of supply planning is changing, particularly in regard to determining the demand and distribution of resources, as well as the order of capital formation for construction organizations. Today the ministries and departments, working within the limits of the funds for material-technical resources allocated to them by norms per 1 million rubles of estimated cost of construction-installation work as ratified by the USSR Gosplan and the USSR Gosstroy, must distribute these funds between the subordinate building organizations and construction sites based on the need determined by projects and estimates.

The nomenclature of material resources used for planning and organization of supply to construction organizations by projects and estimates is significantly expanding. Now this is being extended also to the nomenclature of production distributed by the USSR Gosplan, and its territorial organs will have to provide for all construction organizations in specifically this way.

The change in the order of advance assignment of material resources to construction ministries is also of great significance. For the first 6 months of the plan year it must be assigned in an amount no less than that predicted for the second 6 months of the preceding year. In the first 6 months these ministries must be allocated and supplied no less than 55 percent of their annual funds for automobiles, bulldozers, excavators, tractors and construction cranes.

In recent years, the system of production-technological acquisition, particularly such progressive forms of it as the UPTK, industrial-acquisition trusts, etc. has been functioning rather effectively in the construction ministries (USSR Ministry of Construction, USSR Ministry of Industrial Construction, USSR Ministry of Construction for Heavy Industry Enterprises, etc.) Today it is necessary to have clear interaction of all the sectorial acquisition organs at various levels of construction management with the territorial organs of the USSR Gosstrib.

For effective provision of construction sites with materials, it is necessary to change over everywhere to the establishment of economic ties by the territorial organs only with the building trusts (UPTK). Under these conditions, the role and responsibility of the sectorial acquisition organizations of the republic construction ministries main construction administration and TUS [territorial construction administrations] is increased in the complete supply of facilities with building structures and parts.

Guaranteed comprehensive supply through the USSR Gosstrib territorial organs must encompass not only the construction organizations, but also the industrial enterprises of the building industry. With appropriate economic substantiations, it is necessary to transfer the latter to direct economic ties with the supplier enterprises providing them with metal, cement and lumber.

One of the main questions under discussion, stressed the speaker, is the economy of material resources.

The reduction of material consumption in construction is ensured by the widespread introduction of achievements in science and technology, by the development and introduction of progressive building structures and new effective

materials, by the introduction of technologies which make it possible to reduce the expenditure of materials and fuel-energy resources in the process of production of building structures, parts and materials, and by the improvement in the organization and technology of building production.

The work of the sectorial organs for material-technical supply and acquisition and the USSR Gosstsnab territorial organs greatly facilitates the fulfillment of tasks on the economy of material resources set by the directive organs for the building organizations.

Here positive experience has been accumulated at the construction ministries, especially those which have developed and introduced the comprehensive target programs (KTsP) "Komplektatsiya" [acquisition] and "Ekonomiya" [economy]. For example, the USSR Ministry's KTsP "Komplektatsiya for 1981-1985, which envisions bringing the level of complete set deliveries to 70 percent by the end of the five-year plan, and the level of processing of certain types of materials (glass, linoleum, wallpaper, zinc-coated iron, etc.) at UPTK production-acquisition bases to 75-95 percent, will make it possible to reduce the expenditure and losses of these materials in construction organizations by 3-10 percent.

However, there are serious shortcomings in economy in the work of the construction organizations and territorial organs of the USSR Gosstsnab, primarily in the standardization, storage and application of material resources, as well as in deliveries by quantity and assortment in accordance with the orders and agreements.

At the present time, the construction organizations are bearing increased responsibility for irrational application of material resources. Now when there is an overexpenditure of materials over the need established in accordance with the project-estimate documentations, these organizations will be charged double the cost of the overexpenditure, and this sum will be deducted from their budget income.

If construction organizations use material resources for purposes other than those for which they were intended, including diversion for construction of extra-plan facilities, they will also bear material responsibility. At the direction of the organs of the USSR Gosstsnab or ministry distributing (realizing) these resources, the financial organs will deduct from the budget income three times the cost of materials used for other their intended purpose.

These measures, undoubtedly, will facilitate the concentration of resources on the planned facilities, and will also motivate builders to improve the planning, management and accounting of material resource expenditures.

TsMIPKS Chairman of the Department of Material-Technical Supply and Acquisition and Doctor of Economic Sciences, Professor V. A. Spektor devoted his presentation to the role of production-technological acquisition in increasing the effectiveness of building production and intensification of material-technical provision.

The sectorial system of production-technological acquisition has been developing for 20 years, and much has been accomplished in this time. On the average throughout the sector, UPTK have been created in 70 percent of the construction-installation trusts, combines and PSMO [industrial construction materials organizations].

We may note the leading experience of the following acquisition trusts: Krasnoyarskiyazhstroykomplekt of the USSR Ministry of Construction for Heavy Industry Enterprises, Vostoksibstroykomplekt of the USSR Ministry of Industrial Construction Main Administration on Construction in Eastern Regions and Siberia, Zapstroykomplekt of the USSR Ministry of Construction Main Administration on Construction in Western Regions, as well as the acquisition organizations of the Lithuanian SSR Ministry of Construction. New organizational forms of managing the manufacture and complete assortment provision of building sites with structures and parts--the industrial-acquisition associations--are operating successfully in the Ministries of Construction of the Estonian SSR and the Latvian SSR, and in the USSR Mintyazhstroy [Ministry of Construction for Heavy Industry Enterprises] Main Administration on Construction in Murmansk.

However, while the organs of management of complete assortment provision of facilities at the level of the primary construction management segment (UPTK) have become widely developed, at the level of the central segment only a few trusts, administrations and associations are functioning as the leading organizations.

This has been reflected in the indicators for introduction of the system of production-technological acquisition in construction. On the whole throughout the sector the level of its development does not exceed 50 percent. An analysis of the effect of the PTK system on the effectiveness of building production performed in 1983 by the NIIES [Scientific-Research Institute on Construction Economics] of the USSR Gosstroy showed that those construction organizations which give constant attention to the development of the PTK system, to strengthening its material base, to increasing the level of complete assortment provision of facilities under construction, and to containerization and centralized processing of materials have better end results of their activity.

Practical experience has shown that the system of material-technical supply of construction at the current stage is developing along three basic directions: the mass development and qualitative improvement in the functioning of a progressive sectorial system of production-technological acquisition of structures, semi-finished products and manufactured products by sites within the construction ministries; the completion of a mass changeover to complete-set provision of materials through the territorial organs of the USSR Gosstrib by orders of construction-installation organizations; the creation and development of new forms and methods of complete set provision of technological and other types of equipment to enterprises under construction and reconstruction.

The resolution of the CPSU Central Committee and the USSR Council of Ministers entitled "On Improving the Planning, Organization and Management of Capital

construction, stressed V. A. Spektor, presents a new solution to a number of questions dealing with the supply of material resources to construction. It also requires an improvement in the organization of the system of material-technical supply in construction to correspond to the level of the new tasks.

In this connection, the intensification of material-technical supply takes on particularly great significance. This is manifested primarily in intensifying the effect of material-technical supply and production-technological acquisition on reducing the construction time and increasing the effectiveness of building production (growth in labor productivity, reduction in material expenditures per unit of production, acceleration of turnover in working capital). The intensification of the process of material-technical supply is also reflected in the increase in the qualitative level of organization and management of all materials flow directed to facilities under construction and reconstruction. Timely and complete assortment delivery of materials with increased technological readiness is being organized. The movement of material resources from the supplier to the consumer is performed with the least excess amounts and combined expenditures. The application of fixed capital is improving, and economy of human and reified labor in organizations of production-technological acquisition is ensured.

V. A. Spektor pointed out the basic means of intensifying material-technical supply to construction. These are the development of new forms of organization for supply and complete outfitting of construction sites with structures, products, materials and equipment; the transition to optimal methods of management of supply and acquisitions based on the development and introduction of automated systems, improvement of the organizational-structural forms and increasing the level of management efficiency; improving methods of determining the need for material-technical resources on the basis of progressive and dynamic expenditure norms and with the widespread application of electronic computers; improving methods of managing production reserves; intensifying and improving economic methods of management of supply and acquisition; concentration and accelerated development of the material-technical base for organs of production-technological acquisition with a simultaneous increase in the level of mechanization and automation of cargo handling and warehousing operations, organization of production to increase the technological readiness of materials and semi-finished products, and application of modern transport means (containers, packets, etc.).

Under conditions of improving the economic management mechanism in construction and the planned experiment on construction of facilities "under key", questions associated with complete assortment provision of construction sites with equipment take on particular significance.

In accordance with the above-mentioned resolution, the functions of the Soyuzglavkomplekts [main supply administrations] of the USSR Gosplan are being expanded and their responsibility increased for outfitting facilities under construction and reconstruction with all types of equipment, instruments and special materials in accordance with the project order documentation. In this case the ministries supplying the equipment must ensure adherence to schedules for the manufacture and complete set delivery of the equipment to



facilities under construction, the implementation of control assembly of complex types of technological equipment, the participation of supplier enterprises in overseeing installation of the delivered equipment, and in the fulfillment of start-up and adjustment work performed in bringing the equipment up to project capacity. The responsibility of the customers is significantly increased for ensuring the accuracy and timely submission of orders for equipment, complete set delivery and submission of the equipment for installation in accordance with the schedule.

V. D. Chekalin, chief of the USSR Ministry of Industrial Construction Glavpromstroynab [Construction Material Supply Main Administration], stressed in his presentation that many managers do not give the necessary attention to a thrifty, careful attitude toward the national wealth, to the proper storage of material resources at bases and UPTK warehouses, and to maintaining state fund discipline.

For the purpose of excluding arbitrary diversion of materials (or obtaining them from other sources), it is necessary, in the opinion of the speaker, to organize an exchange of types of materials which are in short supply through the USSR Gossnab territorial organs.

The UPTK, stressed V. D. Chekalin, are called upon to supply material resources in technological sets and to answer on the whole for the complete set provision of construction facilities, and not to work as outdated material-technical supply offices. Everything depends on the initiative of the people. In this regard it would be favorable to promulgate the positive experience of such leading organizations as the UPTK of the Khersonpromstroy and Vinnitspromstroy Combines.

I. I. Savel'yev, chief of Glavvostokstroynab [Construction Material Supply in Eastern Regions Main Administration] of Minvoŝtokstroy [Ministry of Construction in the Far East and Transbaykal Regions] dealt with the role and importance of acquisition organizations at various levels of construction management.

The acquisition organizations, noted the speaker, are called upon to organize the clear interaction between the organs of the USSR Gossnab, which supply generally "raw" materials for construction, and the construction sites using the material resources which are maximally prepared for production consumption.

Acquisition trusts must act in the role of a single customer and payee for the building industry enterprises and a centralized supplier in relation to the consumers. They must implement the delivery of structures and parts in complete sets to the facilities under construction, freeing the UPTK from this materials flow. In turn, the UPTK must implement intra-trust servicing: increasing the technological readiness of semi-finished products and goods and the processing of materials, with delivery of technological sets to the construction facilities and staffing of cost accounting brigades. Their most important functions are the issuance of technological schemes for complete outfitting and participation in the creation of production information on the course of provision of sites with technological sets. The UPTK and the acquisitions trusts are essentially production-technological organizations.

The UPTK must focus the intra-trust material flow, and must not become materials "delivery agents" due to a shortage of resources. The acquisitions trusts at the main administration level concentrate all the material flows emanating from the building structures and parts industry. Therefore, the basic indicator of UPTK activity must be not the volume of goods turnover, but the volume of deliveries of material resources in technological sets.

In his presentation, TsMIPKS docent and Candidate of Economic Sciences L. S. Kuleshova told of the new system of plan indicators for sectorial acquisitions organizations developed by the USSR Gosstroy NIIES. This system covers the acquisitions organizations at all levels of construction management, all periods of planning, and all the directions of work of these organizations, and closely ties in their activity with the end results of building production.

Instead of commodity turnover, the main indicator of activity by the sectorial acquisitions organizations is provided as the "...volume of deliveries of material resources in sets in accordance with the orders and acquisitions schedules adopted for implementation and provided by agreements for the planned volume of contract work, including work performed at construction facilities introduced into operation (for the TSP)". It must be ratified by a higher organization and used for evaluating the activity and material incentives of the workers.

In 1982-1983 this system of indicators underwent experimental verification. The indicators of UPTK activity and methods of their planning in the compilation of five-year and annual plans were worked out in the Minstroy trusts of the Lithuanian SSR, and in DSK-1 [house-building combine-1] of Glavmosstroy [Construction in Moscow Main Administration]. The new methods of planning were tested at the intermediate level of construction management in the acquisition trusts of Vostoksibstroykomplekt, Lenotdelkomplekt, Zapstroykomplekt, in the industrial-supply associations of the Estonian SSR Minstroy and in Glavmurmanskstroy [Construction in Murmansk Main Administration].

The experiment showed that the introduction of the new system of indicators for planning and evaluating the activity of sectorial acquisitions organizations facilitated the improvement of basic indicators of their activity.

For the widespread introduction of the results of this experiment into the practical operation of acquisitions organizations at construction ministries and departments, provisions have been made for preparing a set of methodological documents on planning the activity of sectorial acquisitions organizations and for the material stimulation of their workers. Thus, in 1984 the TsMIPKS and the USSR Gosstroy NIIES developed the "Methodological Recommendations for the Compilation of an Annual Plan of Activity (Construction Supply Financial Plan) for UPTK of Construction-Installation Organizations".

Glavstroytyazhsnab [Construction Supplies Main Administration] Chief of the USSR Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] dealt with questions of economy of material resources and production standardization of material expenditures.



Certain construction main administrations and trusts, noted the speaker, are not fulfilling their assignments on the economic and rational application of material resources. They are allowing disruptions in the order of standardizing the expenditure of building materials, particularly cement. The norms are not reviewed annually. Thus, an investigation of the main administrations of the Kazakh SSR Mintyazhstroy showed that the production norms for expenditure of individual types of materials had not been reviewed for 2 or 3 years.

The incompleteness of the normative base and the methods for determining need increases the problem of balancing planned contract work with material resources.

S. V. Tarasenko, UPTK chief engineer at the Khersonpromstroy Combine shared the experience of his organization on production-technological acquisition.

The Khersonpromstroy Combine operates totally on the brigade order. The annual volume of work performed by the combine comprises 50 million rubles. It has 78 work brigades, each employing 30-50 people. The DSK [house-building combine] which is part of the combine, operates according to the method of the open flow brigade order. The combine UPTK supplies material resources in complete sets to the consolidated building brigade. The planning, accounting and control over the delivery of the sets is done also by brigade. A special sector on supply of brigades has been created at the production-acquisition base. It staffs acquisition specialists, each of which is assigned 8-10 building administration brigades. At this sector the materials are assorted in sets, packed in containers, and then centrally delivered to the construction site work zone.

The UPTK devotes attention to the rational expenditure of materials. For example, repeated issuance of materials to facilities is allowed only with the permission of the combine chief and with the application of fine sanctions.

The work of the UPTK, which ensures the timely and complete delivery of resources to the brigades, increased technological readiness of production and processing of materials in a sum of 1.2 million rubles, has a positive effect on the results of the combine's activity. Thus, in 1983 due to a number of measures implemented by the UPTK, a savings of basic materials in the amount of up to 8 percent was provided, and labor productivity at the combine increased by 1.4 percent.

S. V. Tarasenko noted that in connection with the fact that the open flow brigade order with participation of UPTK brigades has been introduced at the combine, the question of material stimulation of the workers in these brigades must be resolved.

Glavsel'stroysnab [Rural Construction Supply Main Administration] Deputy Chief Yu. Yu. Popov of the USSR Minsel'stroy dealt in his presentation with the problem associated with the liquidation of above-norm reserves of structures and materials and uninstalled equipment. The reasons for their formation are: weak engineering preparation of building production, poor quality and incomplete delivery of material resources to the construction sites, absence of accounting for sets, improper marking of structures, and absence of unloading mechanisms. Non-liquid material goods (broken, defective materials, etc.) have accumulated in considerable amounts in reserve.

The presence of above-norm remnants worsens the financial state of the organization. Additional expenditures are required, associated with safeguarding the material goods, with maintaining warehouse buildings and areas, with loss of quality, and with payment of interest on bank credit. The system of production-technological acquisition is called upon to elevate the economy of the construction organization and to reduce above-norm remnants.

Section Chief of the Project-Technological Institute for Construction Organization and Technology of the Minvostokstroy V. D. Zlobina reported on the participation of acquisitions services in the ministry subdivisions in the introduction of the open flow brigade order according to the scheme "enterprise--acquisition--transport--construction site." In this case, while the brigade method has already become confirmed in the cost accounting brigades at the industrial enterprises of the building industry and at the construction-installation jobs, in order to apply this method at the UPTK and auto transport organizations it was necessary to introduce unified standard-technological documentation on acquisition, with adaptation to the construction brigades.

The institute, working in conjunction with the Orgtekhstroy Trust of Glavvladivostokstroy [Construction in Vladivostok Main Administration], developed a transport-acquisitions schedule which contained information on production-technological acquisition by a facility under construction according to brigades, materials nomenclature, times and volume of materials delivery in technological and routing sets, and types of vehicles, containers and pallets used for transporting the cargo.

Senior Instructor at TsMIPKS and Candidate in Economic Sciences Yu. N. Shumyachkin devoted his presentation to the importance of using the integrated-target method in planning the development of production-technological acquisitions.

Integrated target programs for the 11th Five-Year Plan, noted the speaker, have been developed by the USSR Ministroy, the USSR Minpromstroy and other construction ministries and departments. For example, the KTSP "Komplektatsiya", developed by Minvostokstroy in conjunction with the USSR Gosstroy NIIES for the years 1983-1985 reflected the scientific principles and progressive directions of formulation of a sectorial system for production-technological acquisition (PTK) and methods of managing this system. Also reflected was the economy of material and labor resources achieved as a result of the system's introduction under conditions of intensification of construction and concentration of capital investments in the regions of the Far East and Transbaykal.

The KTSP defined the basic indicators characterizing the level of development of acquisitions in all the ministry's territorial construction organizations, complete set deliveries of structures and materials, containerization and packaging. The program provides for the application of leading methods of organization, preparation and planning of acquisitions on the basis of unified standard-technological documentation on acquisitions, further introduction of problem solving with the application of electronic computers and ASU [automated control systems] on material-technical provision and acquisition, including the formation of UNTD [not further expanded] by computer, the definition of need for materials in accordance with the physical volumes of work, etc. The prospects for the development of the PTK system are also defined.

As a result of the implementation of measures of the KTSP "Komplektatsiya" in 1983-1985, the average level of technological readiness of semi-finished products for production consumption must increase from 40 to 70 percent, of containerization and packaging--from 27 to 62 percent, and of mechanization of cargo handling and warehousing operations at the PKB--from 66 to 76 percent.

According to the ministry data, the implementation of these measures will make it possible to reduce idle times of workers by 20-40 percent, to reduce labor expenditures by 10-12 percent, and to reduce the expenditure and losses at the PKB by 3-10 percent. The economic effect from the introduction of the KTSP program will comprise 40 million rubles throughout the Minvostokstroy.

UPTK Chief A. A. Gudavichyus told of the work experience of the production-acquisitions base of the UPTK within the Vil'nyusstroy Trust of the LSSR Minstroy.

At the present time, the overall area of warehouse buildings in the production-acquisitions base has reached 69,800 square meters. Of this figure, the area of covered storage warehouses is 12,500 square meters and open storage areas--57,300 square meters.

For complete supply of construction sites with structures, products and materials and their delivery to the facilities in good order, a container and pallet pool has been created within the UPTK, numbering 5,700 units. This has made it possible to bring the level of containerization to 85 percent. The PKB is equipped with modern lifting-transport mechanisms (fork lift loaders, stackers, etc.) and a motor pool. With a 16.6 percent increase in the cargo turnover in the last 5 years, the number of workers has increased by only 7.8 percent.

The production-acquisition base is using a new method of storing materials--in containers and pallets on shelf cubicles. This makes it possible to eliminate manual labor in loading them onto vehicles. This has also made it possible to increase the level of mechanization of cargo handling operations to 95 percent and increase the warehouse area use factor to 0.54.

The centralized manufacture of products, processing of materials and increasing the level of technological readiness of semi-finished products at the PKB ensures the rational and economical application of material resources. Thus, the economy of metal is up to 2-3 percent as compared with the normative demand, and the savings in centrally cut glass is 10-12 percent.

The timely complete-set delivery of material resources to the UPTK according to the acquisition schedules from the PKB ensures the annual fulfillment of plans on commodity building production by the Vil'nyusstroy trust and the growth in labor productivity.

A. A. Zabezhinskiy, Chief of the PPR [Work Production Project] group of Trust No 23 within the BSSR Minpromstroy, shared the experience of creating a production preparation section within the trust. One of the main functions of this section is the development of UNTD on the complete supply of facilities for the entire period of their construction. In the process of formulating

this documentation, the section conducts reviews of project-estimate documentation, verifies indicators on material consumption, and particularly metal consumption, controls the application of non-standard structures, and works out questions of effective replacement of materials which are in short supply. The speaker noted the organizational and economic expediency of centralizing the functions of acquisitions preparation at the trust level.

Also speaking at the "round-table" were Deputy Manager of the Promtsement Trust under Glavvladivostokstroy V. G. Arzumanov, who touched upon questions of improving the provision of construction with the required types of sheet metal stock and increasing the role of USSR Gosstrib territorial organs in the organization of deliveries of all types of materials, including local; TsMIPKS Docent and Candidate in Economic Sciences S. M. Shor, who told of the work of the USSR Gosstroy NIIES and the TsMIPKS in conjunction with USSR Minstroy organizations on establishing material incentives for workers in UPTK and acquisitions trusts in accordance with the results of their work on ensuring complete set deliveries of material resources according to established schedules and construction technology; UPTK Chief Engineer of the KaSSR Minsel'sstroy Almaatase'l'stroy No 7 Trust T. I. Polochanskaya, who shared the experience on organization of container and package shipments under conditions of rural construction.

The speeches presented at the "round-table" meeting showed that there are still numerous reserves for improving supply and developing acquisitions in construction. Their realization will serve as a significant contribution to increasing the effectiveness of building production.

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## CONSTRUCTION PLANNING AND ECONOMICS

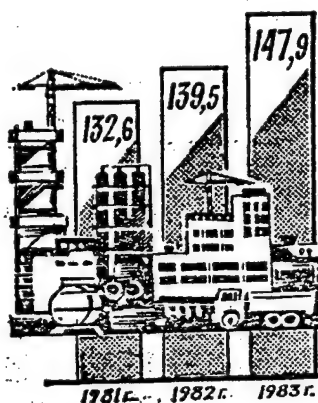
### SELECTED DATA ON CONSTRUCTION 1981-1983

Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 84 p 12

[Article: "Facts and Figures"]

[Text] The country has a total of 32,349 state, cooperative, and inter-enterprise, contract-type construction-and-installation organizations. More than 8.5 million persons are employed in construction.

#### FIXED CAPITAL PUT INTO OPERATION (in comparable prices; in billions of rubles)



As may be seen from this diagram, the putting into operation of fixed capital in 1983 amounted to 147.9 billion rubles, which is 15.3 rubles more than in 1981. The volumes of unfinished construction have been reduced. A decree of the CPSU Central Committee and the USSR Council of Ministers has mandated that, in working out plans, there must, at the same time, be assurances that there will be a reduction in the number of projects under construction, having in mind that, during the next three or four years, the volume of unfinished construction will be reduced to the established norms.

\* \* \*

In 1983 more than 200 new state industrial enterprises went on line.

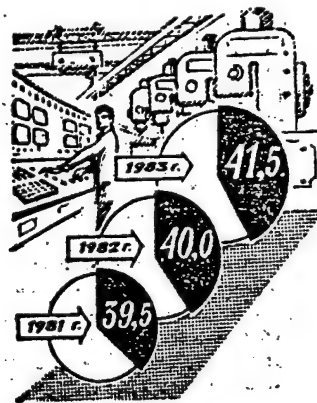
The following extremely important production capacities were put into operation:

Electric power stations, in millions of kW	9.5
Capacities for mining the following:	
Coal, in millions of tons per year	16.9
Iron ore, in millions of tons per year	19.9
Capacities for producing the following:	
Rolled ferrous metals (finished), in millions of tons per year	1.6
Mineral fertilizers (calculated at 100 percent of nutritional substances), in millions of tons per year	1.6
Tractors, in thousands of units per year	9.8
Leather footwear, in millions of pairs per year	12.0

The plan for 1984 has provided for the construction of almost 320,000 facilities of the production type.

\* \* \*

PROPORTION OF OUTLAYS FOR EQUIPMENT IN STATE CAPITAL INVESTMENTS  
(in percentages)



The technological structure of state capital investments is improving. There is growth in the proportion of outlays for equipment--the active part of fixed capital. As may be seen from the diagram, this proportion in 1983 amounted to 41.5 percent. In 1984 the proportion of outlays for equipment should increase to almost 42 percent.

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## CONSTRUCTION PLANNING AND ECONOMICS

### PLAN FULFILLMENT FIGURES FOR LITHUANIAN CONSTRUCTION

Vilnius SOVETSKAYA LITVA in Russian 1 Nov 84 p 2

[Article: "Attention Starting Structures; Lithuanian SSR Gosplan Comments"]

[Text] Over the years of the current five-year plan the republic is meeting the plans for construction and installation work, for putting fixed assets into operation, and for utilizing capital investments better in capital construction. Fixed production capacities are becoming operational on time and the goals for turning over housing units, general education schools, hospitals, out-patient clinics and other non-production projects are being fulfilled or overfulfilled.

The plan for construction and installation work for the nine months was 108 percent completed. All of the most important production capacities, whose construction was specified by the USSR national economic plan, general education schools, preschool children's institutions, out-patient clinics, and a number of other projects were put into operation. The Ministry of Rural Construction and the republic's association of interkolkhoz organizations, "Litmezhkolkhozstroy," successfully met the established plans, having achieved a growth in contract work of 2 and 6 percent respectively compared to the same period last year. Organizations in the republic's Ministry of Construction also were able to exceed the general contract work program by 2 percent, while they exceeded the work program for their own forces by 4 percent. However, overall the subdivisions in the Ministry of Construction failed to complete the planned amount of construction and installation work by 1.3 million rubles or by 0.4 percent.

Capital construction plans were successfully completed in the cities of Shyauliyay, Panevezhis, Alitus, Druskininkay, and Palanga, and in Birzhay, Pasvalis, Rokiskis, Shal'chininkay, and Shilale Rayons. Also, construction organizations did not meet the contract work plans in Kaunas, Skuodas, Shirvintos, and Shvenchenis Rayons. Construction work is being done poorly in Anikshchyay, Kedaynyay, Lazdiyai, Plunge, Shakyay and Vilnius Rayons as well as the cities of Vilnius, Kaunas, and Kapsukas. The ispolkoms of these cities and rayons are giving little attention to improving the work of contract organizations and to forming a stable construction work force.

Only 98 percent of the limit of capital investments was used during the reported period. The reason is due to the fact that a number of ministries



and departments (clients) underutilized the capital investments intended for technically retooling enterprises and replacing equipment. For example, the Ministry of Light Industry did not utilize more than 5 million rubles of capital investments, while the figure was 2.5 million rubles for the State Committee for Supplying Petroleum Products. The Ministry of Procurement, the State Committee for Publishing Houses, Printing Plants, and the Book Trade, and the State Committee for Gas Supply underutilized capital investments.

Only two months remain until the end of the year. The Ministry of Construction, the Ministry of Rural Construction, and the Republic Association of Interkolkhoz Construction Organizations, together with ministries and departments that are clients, as well as ispolkoms of city and rayon soviets must make the maximum effort to concentrate labor and material resources first of all the most important starting structures, housing units, kindergartens and nurseries, and health-care projects and to ensure at the same time that they are turned over for use on time.

The Ministry of Construction, the Ministry of Municipal Services, and the ispolkoms in the cities of Vilnius, Kaunas, Klaypeda, and Kapsukas, and also in the rayons of Trakay and Vilkavishkis must take timely measures to accelerate the construction of municipal projects and to unconditionally meet the annual plans for contract work.

The "Vilniusstroy" Trust, the Shyaulyay Construction Trust, and the Shvenchenis Interkolkhoz Construction Organization should observe the sequence of work more closely in constructing the Trakay, Radvilishkis, and Shvenchenelyay Houses of Culture--the starting structures for the current year.

The Ministry of Agriculture and the Republic Association of Interkolkhoz Construction Organizations must overcome the delay in building preschool institutions and cafeterias in the village in the shortest possible time, while the ispolkoms in Vilkavishkis, Trakay, Skuodas, Zarasay, Pasvalis, Kel'me, Moletay, Alitus, Shvenchenis, Shilale, and Shakyay rayons must accelerate the pace of construction of individual housing units which are substantially lower this year than in previous years.

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CONSTRUCTION PLANNING AND ECONOMICS

UPDATE ON ECONOMIC EXPERIMENT IN LITHUANIA

Vilnius SOVETSKAYA LITVA in Russian 2 Oct 84 p 2

[Article by R. Sakalauskas, chairman, LiSSR Gosstroy: "The Experiment Expands Its Limits"]

[Text] It is a well-known fact that success in a matter of capital construction depends in the most direct manner on the inter-relationships among the following three principal partners in production: the planners, clients, and builders. It would seem that complete harmony should reign here. Because, of course, the interests of all the partners are subordinated to a single goal--the creation of a good-quality product. In practice, though, diverse opinions frequently arise between the participants in construction, and this adversely affects the end result.

Let's take, for example, the solution of the greatest problem confronting capital construction today: making it less expensive, reducing the material and labor outlays. The planning organizations are constantly striving to make the maximum use of the latest achievements of science and technology in their projects. However, this useful and necessary work far from always meets with the approval of the clients and builders. The former are reasonably apprehensive about the additional outlays which, as a rule, accompany the initial periods of introducing progressive structural components, which have not yet been fully mastered by the industry. And the latter are not at all motivated to reduce the estimated cost of a project, inasmuch as the higher it is, the larger can prove to be their profits, wage funds, and material incentives.

How can we draw closer together as much as possible and, perhaps, even merge the interests of all the participants in construction? Solving this problem is the target of an experiment which has been conducted in this republic since the second half of last year upon the initiative of LiSSR Gosstroy. The gist of this experiment was discussed by SOVETSKAYA LITVA in an article published on 10 August 1983 and entitled "A Powerful Innovation for Practice."

More than a year has already gone by. And what are the initial results of the experiment? Have the hopes placed in it been justified? This is the subject of the article by R. Sakalauskas, chairman of LiSSR Gosstroy, which is published below.

First of all, we should probably emphasize the fact that the matter which we are discussing is not really so new: we based the experiment on experience in the GDR, which has been used in practice by Belorussian builders since 1982. The gist of it boils down to the use in the calculations between the clients and the contractors of stable estimated prices for construction output. They are established per unit of capacity, area, volume, or length of the construction projects and remain unchanged, as a rule, for the duration of the entire five-year plan. In our country the working out of such prices still takes a certain amount of time. Hence, we are still compelled, while relying on the experience of the Belorussian builders, to reject the estimated cost of projects, as determined on the basis of the existing price lists, as well as the estimates of the standardized or repeatedly utilized, individual plans.

The recent decree of the CPSU Central Committee and the USSR Council of Ministers, entitled "On Improving Planning, Organization, and Administration of Capital Construction," establishes that, beginning in 1985, the estimated cost of large-scale and complex enterprises and facilities will already be determined on technical-economic grounds, while those which are technically simpler will be determined by the standardized and repeatedly used plans, in accordance with the approved prices. In further developing the plan and the working drawings, the planners and contractors, by utilizing the latest achievements of science and technology, will be able to seek out additional possibilities for lowering the cost of a project, having reliably determined thereby the difference between its actual and estimated costs. This is particularly important for the participants in the experiment: for, you know, this difference is distributed (in definite proportions) among the state budget, the clients, the planning-research, and construction organizations; it is directed at providing material incentives for the workers as well as at reimbursing the increased production outlays connected with introducing an innovation. In case of necessity, these funds are also expended to pay for scientific research and planning-design projects.

In 1983 the experiment was conducted on 26 facilities; the total volume of the construction-and-installation work was 22.3 million rubles. As a result of using more effective and rational solutions in developing the plan documentation, savings were obtained amounting to a total of 583,800 rubles (2.6 percent of the SMR [construction-and-installation work]). They managed to conserve 143 tons of metal and 1,267 tons of cement, along with considerably reducing labor outlays. Expenditures on processing the documentation amounted to only 32,700 rubles.

Economies were achieved by means of introducing at eight projects more improved structural components of foundations (49 percent of the total amount of the savings), and by using at seven projects more progressive structural components (14 percent), as well as by utilizing at eight projects new technology and improved architectural-planning solutions (32 percent). By 1 September 1984 nine projects included in the experiment had already been built and earned an evaluation mark of "good." Moreover, their estimated cost was reduced by 67,000 rubles. Twenty-five percent of this total was transferred to the State Budget, 30 percent was directed into providing material incentives for workers in the contract organizations, 17.5 percent was turned over to the planning organizations,

and 2.5 percent--to the clients. The remaining 25 percent of the savings were left to the contract organizations for reimbursing the increased production expenditures connected with introducing the achievements of science, technology, and advanced experience.

At the present time construction is nearing completion as well on the remaining projects included on the 1983 list.

During the time of the experiment a definite amount of experience has been accumulated. There has been an increase in the material motivation of the planning and contracting organizations to be more active in introducing the achievements of science and technology. As a result there has been a growth in the number of proposals for including certain projects within the framework of the experiment.

After examining them, LiSSR Gosstroy approved for 1984 a list of 80 projects with a total estimated cost for SMR of 65.7 million rubles. The anticipated savings amount to approximately 1.5 million rubles. It is planned to conserve 1,000 tons of metal and 3,000 tons of cement, along with significantly reducing labor outlays. To conduct additional planning operations, a total of 64,700 rubles is required (each ruble spent on them yields 23.6 rubles in savings).

In 1984 the republic's other leading planning organizations were likewise included in the experiment. For example, Litkolkhozproyekt and Litdorproyekt, as well as one of the principal contracting organizations--Mezhkolkhozstroy.

During the first half of 1984 the planning institutes completed adjusting the documentation with regard to 38 projects (total estimated cost--19 million rubles). As a result, there is a saving of 827,000 rubles, 723 tons of metal, 2,490 tons of cement. In comparison with the first six months of last year, there is an increase in all indicators.

As analysis has shown, the experiment includes basically housing and public construction projects, and this is linked with the profile of operations of the planning institutes under republican jurisdiction. But the large-scale industrial and energy-producing projects under construction in this republic are created by the leading planning organizations under Union jurisdiction. Some of them--Belgiprobiosintez, the Grodno Branch of GIAP /State Scientific-Research and Planning Institute for the Nitrogen Industry and Products of Organic Synthesis/, and others--have addressed a petition to LiSSR Gosstroy to include certain of their own projects in the experiment, after presenting well-grounded proposals for improving the planning solutions which have been adopted. Their implementation on two projects alone could bring more than 300,000 rubles in savings.

In my opinion, this is an extremely convincing argument in favor of the experiment. Obviously, its limits should be even further expanded.

The first year of conducting this experiment has revealed a need to improve its methodological positions. There is still no specification in them as to how we should account for and utilize the production capacities freed up, in the final analysis, among the contractors, as well as the wage funds, the manpower limits, and the material resources saved. In our opinion, all this should be directed

building socio-cultural facilities for the contracting and planning organizations. The possibilities for further expanding the experiment's framework are closely linked to the development of stable prices. The efforts of the country's foremost planning and scientific organizations should be concentrated on solving this problem without delay; the appropriate ministries and departments --the clients of capital construction--should be drawn more broadly into this work.

LiSSR Gosstroy (in conjunction with this republic's Ministry of Agriculture) is proceeding to work out stable prices for agricultural facilities of the production type. New price lists as well as estimates for standardized plans are also being drawn up in a parallel fashion.

Making capital construction less expensive, lowering the outlays of material and labor resources will continue to remain an important task for the national economy; and the experiment conducted by us will serve as a solution to it. When you objectively evaluate the initial results, you become convinced of its effectiveness, as well as the feasibility of drawing all the planning and contracting organizations into it.

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## INDUSTRIAL CONSTRUCTION

### MANPOWER, EQUIPMENT SHORTAGES IN INDUSTRIAL CONSTRUCTION

Moscow STROITEL'NAYA GAZETA in Russian 11 Nov 84 p 1

[Article: "Commentary by the Rural Construction and Land Reclamation Department"]

[Text] An analysis of the construction of mills, elevators, and mixed feed plants shows that there is no basis for satisfaction--work is dragging on at a majority of the projects. From the start operations are threatened with disruption everywhere.

First of all the general contractor organizations deserve criticism since they are not providing completed structures on time for the installation of technological equipment. There are objective reasons for this--many trusts have a poor production base and insufficient people.

But contractors do not always organize construction skillfully--the required control over maintaining labor and technological discipline is lacking, the advantages of the brigade contract are not used aggressively, and the "workers' relay race" is not used as part of the arsenal. Enterprises in the construction industry often let them down by not delivering precast reinforced concrete, brick and cement on time. The USSR Ministry of Rural Construction must straighten affairs out in this area as quickly as possible.

The USSR Ministry of the Gas Industry has unfinished work also. A sharp lack of equipment is being felt at many construction sites. It is true that there are objective reasons here also--plant manufacturers are letting them down. But there are facts that do not bring honor to this ministry.

Here is one of them. Plants in the All-Union "Spetselevatormel'mash" Association are assigned the task of manufacturing non-standard pneumatic transport for mills. They fill consumer orders on time. But half of the equipment is of poor quality. A useless unit arrives at the site and they don't know what to do with it.

Under such circumstances they usually call specialists from the plants in order that they can fix the flaw at the site. Repairs take months. For example, the construction of large mills in Amur and Chelyabinsk Oblasts is dragging on for this reason.

Little time remains before the end of the year. It is now necessary to apply all efforts so that the planned projects are turned over on schedule and with the highest quality.

## CONSTRUCTION METHODS AND MATERIALS

### ADVANTAGES OF ALTERNATE CONSTRUCTION MATERIALS VIEWED

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 9, Sep 84 pp 60-62

[Article by B. Usenbayev, engineer: "On the Structure of Wall-Materials Production"]

[Text] In construction the greatest proportion of material outlays goes into wall materials: their cost amounts to 20--40 percent of the total costs of projects. With respect to weight they comprise approximately 60 percent of a building's mass. On the whole, the outlays of wall materials per 1 million rubles amount for the SMR [Construction-and-Installation Ruble] of Kazakhstan to approximately 1,400,000 standard bricks. In industrial construction this figure is 656,000, in housing construction--1,860,000, and in agricultural construction--1,130,000 standard bricks.

The role played by wall materials must not be limited merely by the volumetric or cost indicators. Their appearance, quality, and degree of plant finish determine the level of prefabrication and, consequently, likewise the labor-intensiveness of construction. Indeed, if a building is being made of brick, the level of prefabrication, no matter how one might wish, cannot be higher than 30--35 percent; nor can one avoid the so-called "wet" processes. At the same time, in erecting a building made of large panels with a high degree of plant finish, one can reach a level of prefabrication close to 80 or even 90 percent. Moreover, the over-all labor-intensiveness of the entire cycle of operations decreases by 40--60 percent. Thus, increasing the proportion produced, above all, of efficient wall materials is an extremely important condition for raising the technical level of construction as a whole and for the effectiveness of capital investments.

The dynamics of wall-materials production in Kazakhstan during the years 1960--1980 testify to positive shifts. The proportion of bricks in the over-all volume of wall materials has declined (in 1960 it was 73.7 percent, while in 1980 it was 49.7 percent). At the same time there has been an intensive growth in the output of large-panel wall components, above all, KPD [large-panel home-building] panels and hinged panels for industrial buildings. Over the past 20 years their output has increased from 37 million to 1,220 million standard bricks, while their proportion has grown from 2.2 percent to 30.5 percent. Nevertheless, we must not flatter ourselves too much on what has been achieved. It is a well-known fact that in the 11th Five-Year Plan the question of economizing on all types of resources has been posed with particular sharpness. And

construction is, perhaps, the most material-consuming, labor-consuming, and capital-consuming sector. For the maximum conservation of resources we need technical improvements in the material base of construction as a whole and, above all, improvement in the structure of producing wall materials and structural components.

As is known, practical experience has demonstrated the high economic effectiveness of wall structural components made of lightweight concretes with porous aggregates. Buildings made of keramzit-concrete panels are approximately 25--30 percent lighter in weight than those made of brick. The lesser weight allows us to reduce the load (and the outlays) on horizontal and vertical transport, as well as on foundations, to decrease the hoisting capacity of the cranes being used, and to manage with those of lesser capacity, which are much more economical. Residential and public buildings erected with keramzit-concrete panels, and having the same exterior dimensions, have 3--5 percent more usable space, as compared with those made of brick, and this reduces the amount of the specific expenditures. Also of great importance is the fact that the time periods required to construct prefabricated buildings in accordance with the norms are 15--25 percent less than for brick buildings. But, in fact, it takes twice as long to build brick apartment houses than it does for prefabricated ones. And this, according to the most modest calculations, makes it more expensive to construct buildings made of brick by 2--4 percent and sometimes even considerably more.

It must also be taken into account that, at the present time, the mechanization of bricklaying has reached a certain limit the transition through which requires the creation of new machinery and a new technology of bricklaying. And this is connected not only with large outlays but also requires a lengthy period of time. Thus, during the next 10--15 years the growth of labor productivity when working with bricks will be extremely small. And it would not be feasible to aim at this.

The considerable advantages of keramzit-concrete panels over the small-piece wall materials manifest themselves not only in building housing but also in building cultural-everyday-service and production facilities. Moreover, the labor outlays at the construction site are reduced by 33 percent, while the total outlays (plant and at the construction project) are reduced by 17 percent, the mass of the buildings is lessened by 25 percent, and the length of time required for construction is curtailed.

It must be stated that, along with keramzit concrete, successful use has been made of perlite concrete, agloporit concrete, pumice concrete, and cellular concrete. For example, the expenditure of cement per square meter of cellular-concrete wall is 40 kg less than for keramzit-concrete walls. A square meter of gas-entrained-concrete walls of a Series 1-468B apartment house is 12 rubles cheaper than one of keramzit walls--which are also extremely progressive structural components.

Prefabricated construction is most effective in regions with a prolonged and severe winter, where the "wet" processes are particularly disadvantageous. And in the Kazakh SSR such regions comprise 65 percent of the territory. Lightweight concretes allow us to obtain single-layer structural components,



convenient to erect and reliable in use, as well as possessing good heat- and sound-insulating properties. All this opens up broad possibilities for structural components made of concretes using artificial, porous aggregates.

Thus, one of the basic directions is the intensive development of the production, above all, of large-size, wall components made of lightweight concretes, using porous aggregates.

The best-quality panels at the present time are being made of keramzit concrete. Our republic has at its disposal the necessary raw-material base for producing good-quality keramzit. In addition to keramzit, however, use may be made of slag pumice for light-weight concretes; utilizing in large amounts the blast-furnace slags from Kazakhstanskaya Magnitka and the thermophosphate fertilizer plants of Dzhambul and Chimkent.

Calculations have shown that increasing the proportion of keramzit-concrete panels within the total balance of wall panels for the republic merely by 1 percent would ensure a growth in construction labor productivity by 2--3 percent, would raise the level of prefabrication by 0.7--0.8 percent, and would reduce the volume of freight hauls by 50,000--60,000 tons a year.

Of great interest in solving the problem of supplying construction with wall materials is the development of the production of the so-called laminated panels (of the "sandwich" type). They are of various kinds and type sizes, depending on the raw material and purpose. For "facing" use is made of asbestos-slate veneer, corrugated aluminum, or sheets of galvanized steel. As a heat insulator for the inner layer use is made of slag-cotton tiles, foam polystyrene, and other heat-insulating materials. Such panels possess a number of merits: they are lightweight (20--50 kg per sq. m), quite strong, do not require surface finishing, and have good heat-insulating properties.

Their production in this republic is still, unfortunately, not large. They are manufactured in modest-sized quantities only at the workshops of four enterprises. But we must organize their output not only at large, specialized plants but also at the workshops of many KSMiK [construction-materials combines]. Because the total needs of this republic for laminated panels will reach 900,000--1,000,000 sq. m by the year 1990.

It is also essentially important that the organization of the production of laminated panels with regard to capital-intensiveness is 3--5 times lower than for bricks or precast reinforced concrete. Moreover, it does not require complex and expensive equipment. The fabrication of laminated panels can be organized by the conveyor method even in modest-sized workshops at construction-materials combines. But plants must also be built where construction is concentrated, based on trusts production structural components.

Raw materials (asbestos veneer, slate, slag-cotton tiles, etc.) can be obtained without great expenditures by expanding the enterprises now operating in this republic. We must make this move, taking into account the fact that the field of use for laminated tiles is extremely wide: industrial and agricultural buildings, mobile and stock-type apartment houses, as well as service facilities.



It is no secret that Kazakhstan has quite an acute problem of developing housing construction in rural areas. It is possible to solve this problem to a considerable extent (moreover, economically and quickly) by building 2--4 plants for prefabricated wooden home building. It is not by chance that the "Basic Directions for the Economic and Social Development of the USSR for the Years 1981--1985" directly points out the following: "Develop the production capacities and increase the output of wooden panel-type houses for rural housing construction."

The deep, thoroughgoing, and up-to-date processing of timber allows us to obtain high-quality wall panels from low-grade wood and waste products by the pressing method. After being treated by special substances, they do not rot, and they have a lowered combustibility point. Pressed-wood wall panels possess excellent construction qualities: they can be planed, sawed, and nailed. They may be produced in a textured form of any thickness or size.

Development of prefabricated wooden home-building will allow us to solve a number of problems: speeding up housing construction in rural areas, lowering its labor consumption and costs, and reducing the need for wall materials.

It is important that such houses can be manufactured not only in stationary but also in mobile forms, i.e., on wheels or transportable. This is particularly convenient for livestock breeders. A prefabricated house can be delivered in a dis-assembled or even in a ready-made, finished form in any remote, out-of-the-way place. In the petroleum-industrial areas of Siberia ready-made, panel-type, wooden houses are already now being transported by helicopter for distances of 300--500 km.

We also have to take into account the fact that reserve supplies of local, low-quality wood, suitable for the manufacture of housing components, exceed 100 million cu. m in this republic. And this is quite a considerable amount.

At the present time Kazakhstan produces more than 100,000 sq. m of various pressed materials made of wood. But these are basically thin types of tiles, which go into the manufacture of furniture and for finishing the interiors of buildings. Unfortunately, it is not feasible to use them as wall materials. Hence, we ought to proceed to design and build specialized enterprises for turning out pressed-wood wall panels and tiles for the floors and ceilings of buildings.

The structure of the production of wall materials and structural components depends, to a considerable degree, on the deployment of enterprises and the possibility of organizing production, on the presence of raw materials, energy, and other resources. Furthermore, it frequently happens that in regions where construction is being developed there is a lack of the necessary raw materials for producing wall materials. They must be shipped in from the outside, but hauling is quite expensive. Therefore, the basis of forming the structure of the production of wall materials and structural components must be founded on the principle of the least possible expenditures incurred for the final output, i.e., per square meter of a finished wall.

Many scientists (in particular, P. Gorbushin and Ya. Rekitar\*) have recommended that the expenditures incurred for the final construction output be determined in accordance with the following formula:

$$P = (P_s + P_p + P_t + P_m)M + \frac{S_e}{E_n}$$

where P represents the complete outlays per unit of finished structural product;

$P_s$ ,  $P_p$ ,  $P_m$  represent the expenditures incurred respectively for raw material, production, transportation, and installation of a unit of the product;

M represents the coefficient of the service life of the structural component;

$S_e$  represents the operational expenditures connected with using the given type of material;

$E_n$  is the normative coefficient of effectiveness for incurring expenditures at various times.

From our point of view the incurred expenditures, as enumerated according to this formula, define with sufficient precision the effectiveness of turning out the end product. This formula, therefore, can be utilized in providing the technical and economic grounds for deploying the enterprises engaged in producing wall materials and structural components.

In evaluating the effectiveness of enterprises, an essential role is played by such factors as the degree of production concentration. Today, when labor resources in remote areas have been exhausted, the small-scale enterprises no longer facilitate the development of the economy but rather retard it and scientific and technical progress. They turn out expensive and poor-quality products, which, as a result, reduce the effectiveness of capital investments in the national economy.

The concentration of production, on the contrary, allows us to sharply increase the intensiveness and effectiveness of turning out local building materials and structural components and, as a result, to increase the industrialization and intensification of construction itself.

Nevertheless, concentration of production by itself still does not solve the problem as a whole. We must also take into account the deployment of a product's users and the dislocation of construction projects. In the oblast cities and large conglomerates of concentrated construction with a relatively large need for materials on a limited territory, the effectiveness of production concentration can provide a positive effect. All the difficulty here lies in the departmental disconnectedness of the enterprises producing wall materials. The matter becomes much more complicated with the increase of efficiency of producing local construction materials by means of concentration, when it is a case of servicing dispersed, particularly rural, construction. In this case it is necessary to accord attention to the density of use of a given type of construction material in determining the degree of effectiveness.

\* P. V. Gorbushin, Ya. A. Rekitar, "Ekonomika promyshlennosti stroitel'nykh konstruktsiy i materialov" [Economics of the Structural Components and Construction Materials Industry], Moscow, Stroyizdat, 1969, p 59.

We must likewise bear in mind the fact that, because of Kazakhstan's enormous territory, hauling most types of construction freight from oblast to oblast, as a rule, is not feasible. It is necessary, therefore, to strive to manufacture the basic mass of construction materials within the oblasts, insofar as this is possible. But at the present time the inter-oblast hauls of construction-type freight are still very great. Even in 1980 the hauls of precast reinforced concrete and wall materials between oblasts amounted to approximately 3 million tons.

As may be seen from the "Basic Directions of Economic Growth and Social Development of the USSR for the Years 1981--1985 and for the Period until 1990," in the future capital construction in Kazakhstan will be developed at a rapid rate. The guideline rate of SMR growth in the future amounts to 3.5 percent. This means that the increase in wall materials must also amount to at least 3.5 percent.

In connection with this, we must again seriously ponder the question of what should be given top priority in production. That is, we ought to discuss the structure of the production of construction materials.

It has already become apparent now that further growth in the production of bricks would be economically unfeasible. For this reason its volumes should be maintained at the level which has already been achieved (i.e., 1.8--2 billion bricks a year). Thus, the proportion of this material within the total volume must decline to 32 percent in the future.

We must also maintain the level which has been achieved in the production of large and small wall blocks by merely increasing the production of blocks made of coquina. Furthermore, priority must be accorded to progressive types of structural components.

In order to decrease the labor-consumption and construction cost, it makes sense to intensively develop the manufacture of progressive wooden and laminated wall panels. The proportion of such structural components in the total volume of wall materials must grow to 15 percent in the future.

As analysis of construction production and the tendencies of technical progress has shown, panels made of lightweight and cellular concretes will be the basic wall components of the future. The leading place among them will be occupied by panels made of keramzit concrete. The proportion of lightweight concrete panels in the total volume of wall materials will amount to approximately 40 percent.

Such are the forecasts of the basic directions in this sector's development; they must be taken into account in the development of construction-materials production in this republic.

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